2004-05 SQUIRREL HUNTING COOPERATOR SURVEY REPORT

KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES

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Thank you to all the hunter cooperators who sent in hunting logs for the Fall Squirrel Hunter Cooperator Survey. Your efforts are appreciated, and we encourage you to continue sending in your hunting logs. Enlist your hunting buddies to do the same! The following report will cover the results of last season's (2004-05) Fall Squirrel Hunter Cooperator Survey and the 2004 Mast Survey. Last season's harvest and hunting effort totals will be included as well as the current population trends. Of course, I will also provide an outlook for the upcoming season!

I. 2004-05 Fall Squirrel Hunter Cooperator Survey

The squirrel survey was developed in 1995 as a voluntary initiative. Hunters are asked to record data including date of hunt, county hunted, hours hunted, number of hunters, number of dogs, number of fox squirrels (seen, killed, and wounded), and the number of gray squirrels (seen, killed, and wounded) on a diary-type hunting log. Logs are available through the hunting guide, from the KDFWR website (http://fw.ky.gov/), KDFWR wildlife biologists, area managers, and conservation officers. Hunters simply keep the log up-to-date as the hunting season progresses, and mail it to the Game Farm when they're finished hunting for the season. Data collected from the survey gives the KDFWR information that can be used to monitor squirrel population trends in Kentucky and better serve the hunters of the state. Each year participating hunter cooperators are mailed a new hunting log, their log from last year, the results of the survey, and a small gift.

Summary of Last Year's Hunter Logs

Participation in last year's survey decreased 17% from the 2003-04 season. Hunting logs were received from 95 hunters who averaged 15.1 hunting trips during the season. Nineteen percent of hunts included the use of dogs. Hunts lasted an average of 2.6 hours. Data was provided from 1,432 hunts that occurred in 81 counties across the state. The central region had the largest number of hunts with 588, followed by the western region with 510, and the eastern region with a total of 334. The number of hunts per county was well distributed except for a small section in the central portion of the eastern region (Figure 1).

Total squirrels seen by hunters averaged 6.5 per hunt or 2.5 per hour. Observations and harvest showed some variability throughout the season, but the rate of harvest of observed squirrels was stable (Figure 2). Hunters averaged seeing 5.5 gray squirrels per hunt (2.1/hr.) and 1.0 fox squirrel per hunt (0.4/hr.) statewide. Total squirrel harvest averaged 3.2 per hunt (1.2/hr.). Gray squirrel harvest averaged 2.7 per hunt (1.0/hr.), and fox squirrel harvest averaged 0.5 per hunt (0.2/hr.). The number of gray squirrels seen and harvested per hour was up slightly from 2003-2004, while the same data for fox squirrels remained stable (Table 1). The maximum squirrels (by species) observed during a single hunt were 39 for gray squirrels (5 hunters) and 30 for fox squirrels (2 hunters). Last year's survey results yielded a roughly 50% hunting mortality rate for an observed squirrel, and showed a significant increase in hunter effort (15 hunts/cooperator)(Table 2).

Figure 2. Squirrels seen and harvested per hour of hunting from the Squirrel Cooperator Survey, 2004-05.

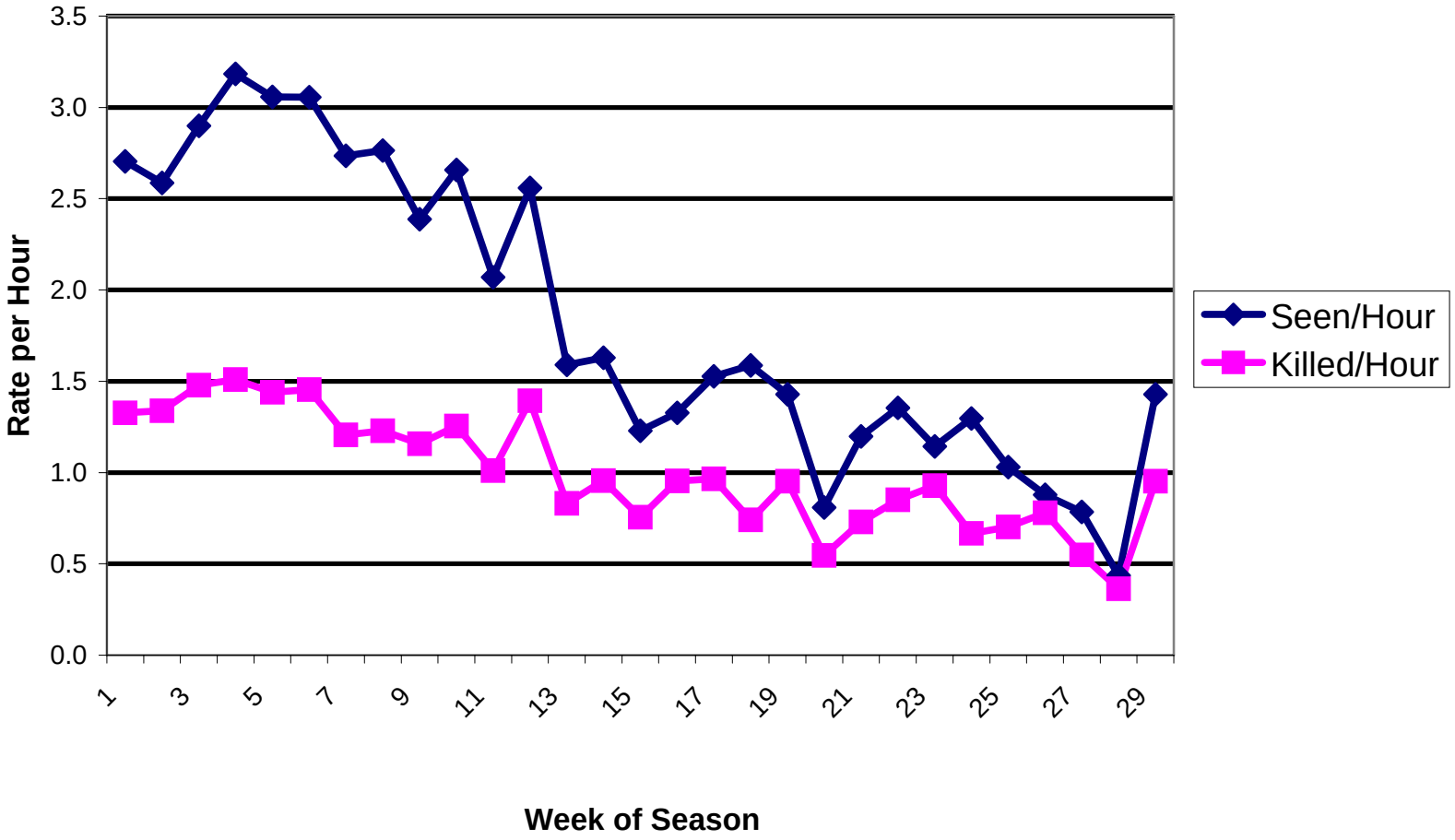


Table 1. Observation and harvest rates of fox and gray squirrels from Fall Squirrel Hunter Cooperator Surveys, 2000-2005.

	Fox Squirrels				Gray Squirrels			
	Seen		Harvested		Seen		Harvested	
Season	**Hour**	**Hunt**	**Hour**	**Hunt**	**Hour**	**Hunt**	**Hour**	**Hunt**
2000-01	0.4	1.3	0.3	0.7	1.4	3.9	0.9	1.8
2001-02	0.5	1.4	0.3	0.8	1.7	4.7	1.0	2.0
2002-03	0.5	1.2	0.3	0.7	2.3	6.2	1.4	3.1
2003-04	0.3	0.9	0.2	0.5	1.9	5.0	0.9	2.3
2004-05	0.4	1.0	0.2	0.5	2.1	5.5	1.0	2.7

Table 2. Summary of Fall Squirrel Hunter Cooperator Survey data, 2000-2005.

STATISTICS	2000-01	2001-02	2002-03	2003-04	2004-05
Total cooperators	101	120	95	114	95
Total hunts	1186	1425	1049	1321	1432
Total counties	80	91	83	83	81
Average hunts/cooperator	11.7	11.9	11.0	11.6	15.1
Total hours	3389	3916	2854	3518	3786
Hunts using dogs (%)	16.7	17.5	13.0	14.2	19.0
Total fox squirrels seen	1520	1956	1297	1173	1373
Total fox squirrels killed	877	1098	775	632	777
Total fox squirrels wounded	48	50	51	36	44
Total gray squirrels seen	4648	6690	6463	6701	7894
Total gray squirrels killed	2095	2802	3203	3053	3846
Total gray squirrels wounded	182	235	254	273	297
Harvest of squirrels seen (%)	48.2	45.1	51.3	46.8	49.9
Squirrels wounded (%)	3.7	3.3	3.9	3.9	3.7
Hunting mortality (%)	51.9	48.4	55.2	50.7	53.6

Hunter Effort

Hunting effort was greater towards the beginning of squirrel season. Forty-eight percent of the hunts took place in August and September (weeks 1-8). The first seven weeks comprised only 25% of the squirrel season, but accounted for 61% of the total squirrel harvest (Figure 3). The hunter effort index declined steadily throughout the season, and squirrel-hunting trips were rare in January and February (Figure 4). However, this year's survey did show small increases in hunting over the Christmas/New Year holidays. Squirrel hunting is one of a few seasons open in August and September, and later season opening dates for deer, waterfowl, rabbit, grouse, and quail may account for the greater hunting effort taking place towards the beginning of squirrel season. Only 9% of the total hunts took place in November, and the dramatic drop in hunting rate was likely a direct result of the onset of deer gun season. Accordingly 88.1% of the squirrels harvested in the 2004-05 Fall Squirrel Hunter Cooperator Survey were taken before modern gun deer season (November 13, 2004, Week 13).

This was the first year of the February 28th closing date for squirrel season, and the 2004-05 season showed an overall decrease in late season hunting. In 2003-04, January hunts comprised 8.0% of the hunts and 7.4% of the harvest. However, this year, the month totaled 4.2% of the hunts and 2.4% of the harvest. February saw even fewer hunts, comprising just 3.4% of the hunts and 1.7% of the harvest.

Figure 3. Proportion of hunts and harvest by month from the Fall Squirrel Hunter Cooperator Survey, 2004-05.

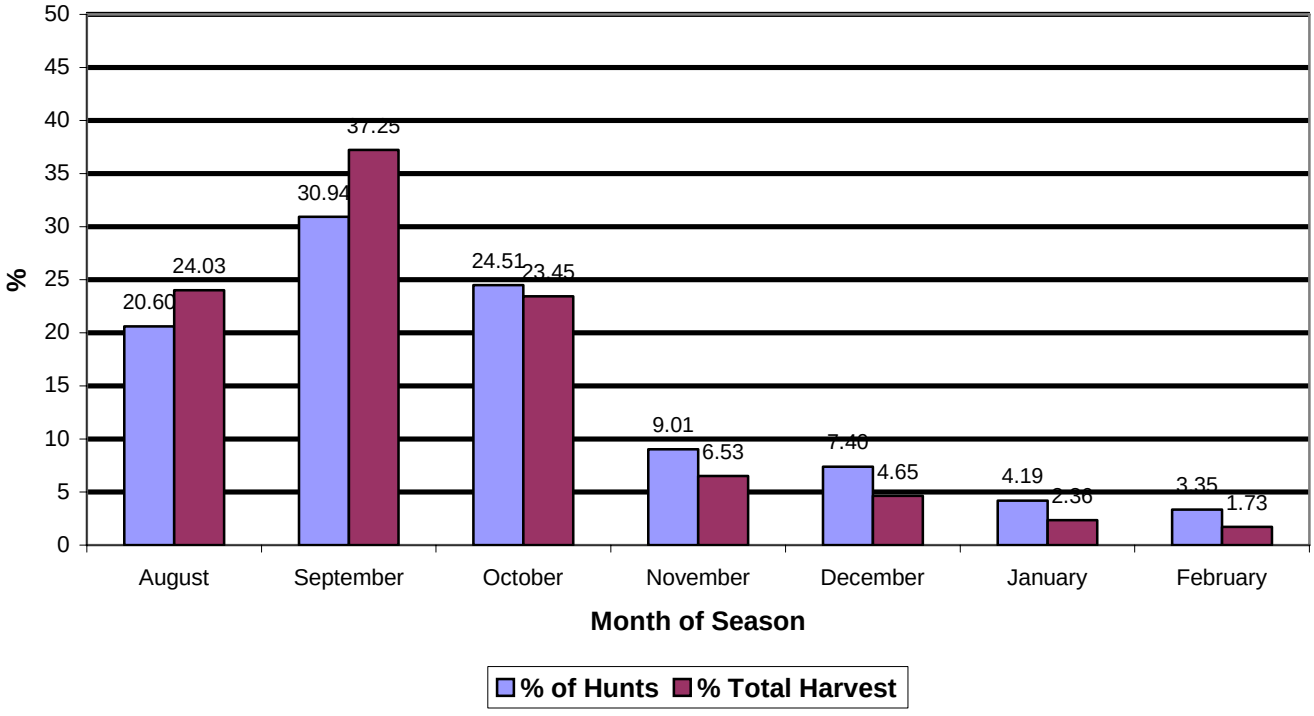
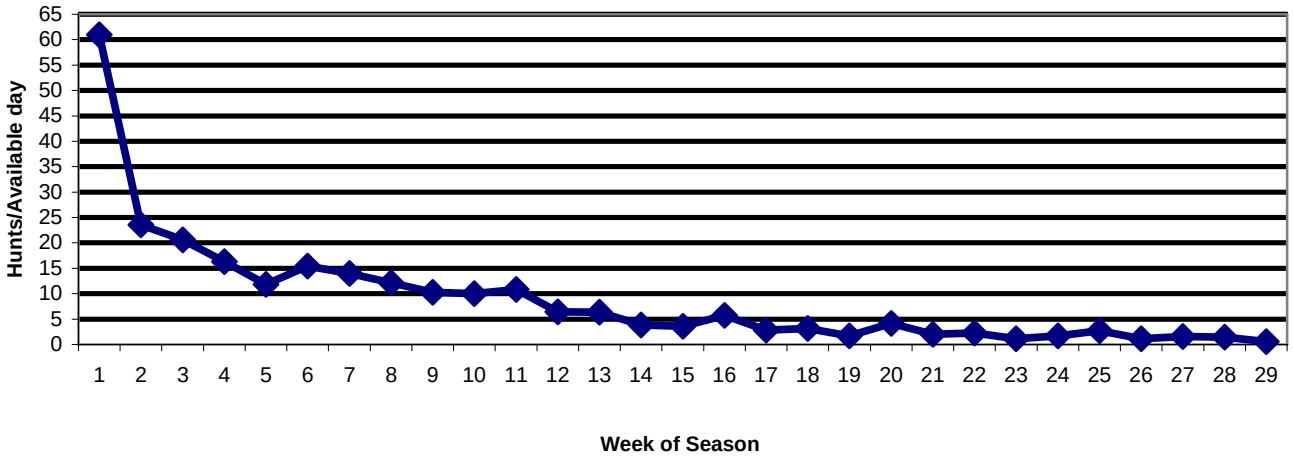


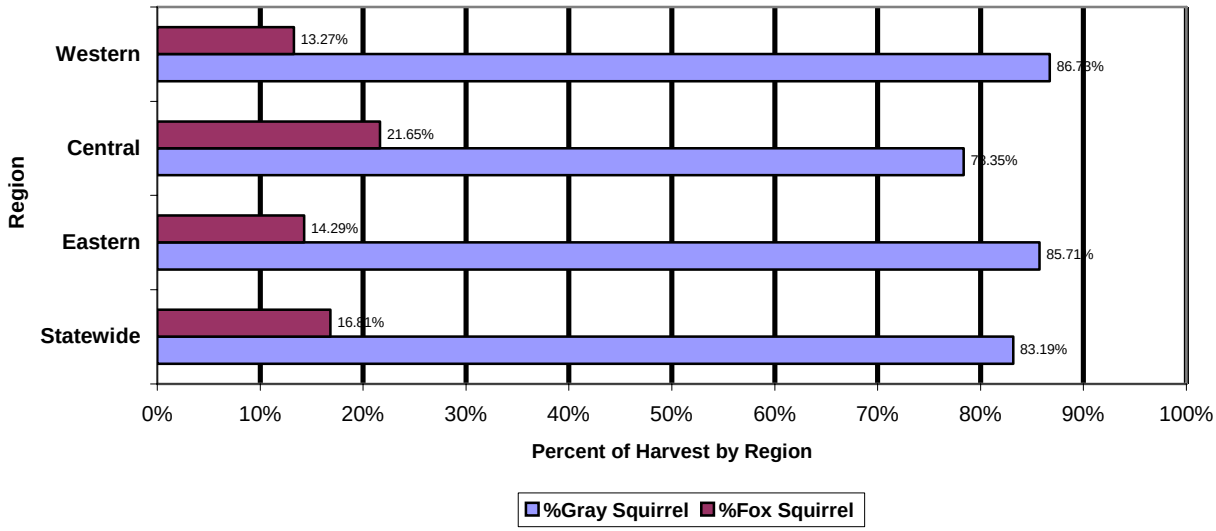
Figure 4. Hunts/availabe day index from the Fall Squirrel Hunter Cooperator Survey, 2004-05.



Harvest

Hunters harvested 49.9% of squirrels seen and wounded 3.7%. Assuming wounded squirrels did not survive, the hunting mortality rate was 53.6 % of squirrels seen in 2004-05. Gray squirrels were harvested nearly 5 to 1 compared to fox squirrels statewide. Regional harvest trends mimic the statewide results (Figure 5). The rate suggests Kentucky squirrel hunters prefer hunting in more extensive forests and woodlands than small woodlots and fencerow-type habitats. It also implies that gray squirrels are more abundant than fox squirrels. However, fox squirrels were harvested at a higher rate when observed. Gray squirrels were harvested 49% of the time observed, and fox squirrels were harvested 57% of the time observed. Fox squirrels may be more easily harvested because of their larger size, more solitary behavior, level of wariness, or use of open habitats.

Figure 5. Species composition of the harvest from Fall Squirrel Hunter Cooperator Survey, 2004-05.



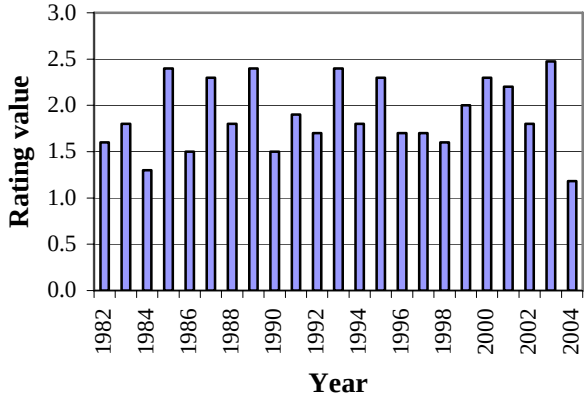
II. 2004 Mast Survey Results

A statewide mast production survey of Kentucky's most important producers of wildlife foods was initiated in 1953 and has been conducted annually thereafter. A close relationship has been found between a given year's mast production and the following year's squirrel population level statewide. The 2004 mast survey inventoried three tree groups (hickories, red oaks, and white oaks) and three individual species (black walnut, American beech, and flowering dogwood) that previous studies have revealed to be of primary importance in Kentucky. Production was rated by visual estimates made primarily during September and October and recorded on standardized forms.

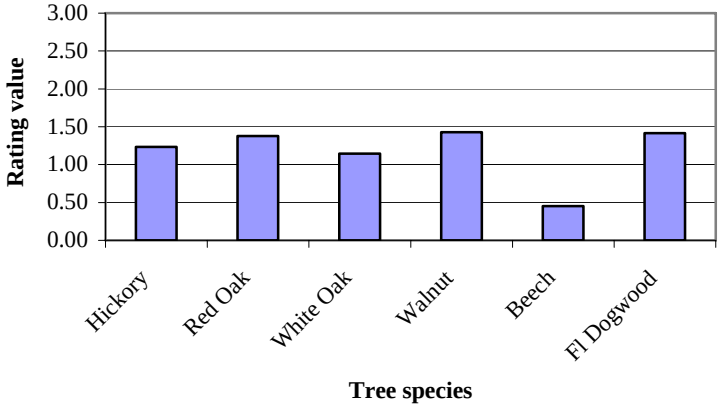
Summary of the Survey

On a statewide basis, this year's mast production was rated at 1.2, the lowest recorded in over twenty years. As a result, the winter food source was considered light statewide. Decreases in production were recorded for all species compared to 2003. The soft mast production of dogwoods for the state was rated at 1.4, the same light to moderate rating received by red oaks and black walnuts. The light mast crop last year may contribute to decreasing forest wildlife populations, because lower food supplies could lead to higher rates of winter mortality and lower reproductive potential in 2005.

Statewide overall mean mast production ratings, 1982-2004.

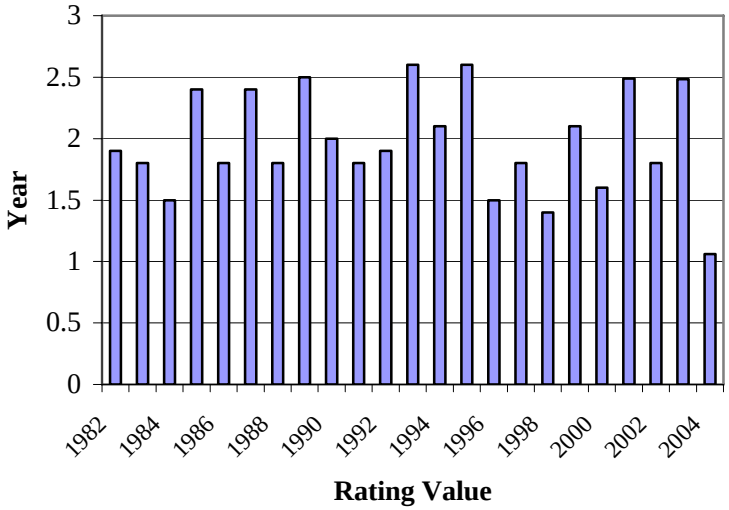


Statewide mast production rating by tree species for 2004.

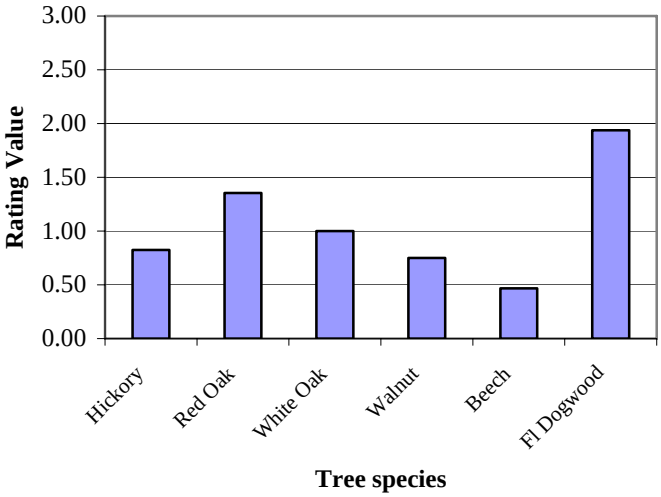


Western Region: The overall 2004 mast production for the western Kentucky region was rated as light (1.1). This represents a decrease of 56% (1.4) from last year (below left). Production was low for hickories, white oaks, and black walnut. Flowering dogwood production was moderate and beech was extremely light (below right). The decrease in overall production could cause forest wildlife populations to decrease in the western region.

Western Kentucky overall mean mast production ratings, 1982-2004

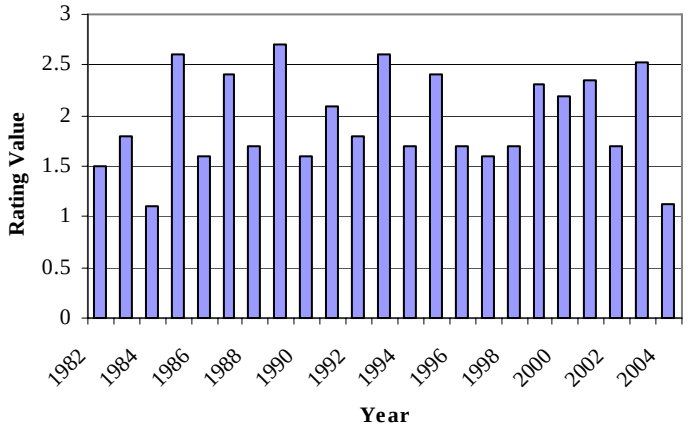


Western Kentucky mast ratings by tree species for 2004

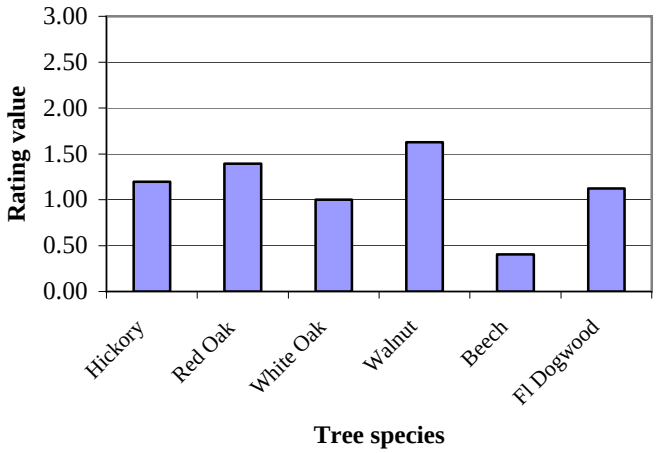


Central Region: The overall mast production index for central Kentucky (1.1) also corresponded to a 47% (1.4) decrease from last year (bottom left). The light to moderate rating for the hard mast species will provide decreased food supply for forest wildlife species in this region. The light (1.1) rating for soft mast (bottom right) will further hinder food availability through the winter.

Central Kentucky overall mean mast production ratings, 1982-2004

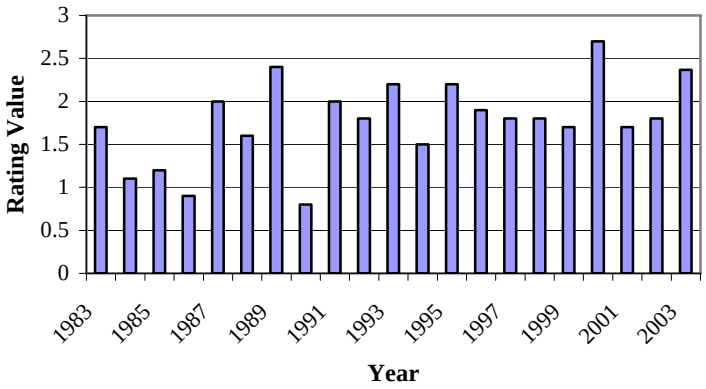


Central Kentucky mast ratings by tree species for 2004

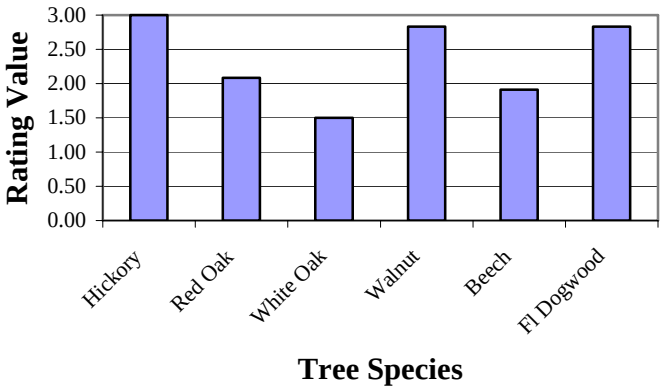


Eastern Region: The eastern region production rating (1.7) for 2004 (bottom left) was a 29% decrease from the previous year's figure, which represents the smallest decrease from 2003 compared to the other region's ratings. Decreases were documented for all species, except the white oaks, which remained light to moderate (1.5). Light to moderate production was also recorded for hickories, red oaks and American Beech, while walnut and flowering dogwood received a moderate rating. (bottom right). As with the western and central regions, the decrease in mast production will likely lead to decreasing forest wildlife populations in the eastern region.

Eastern Kentucky overall mean mast production ratings, 1983-2003.



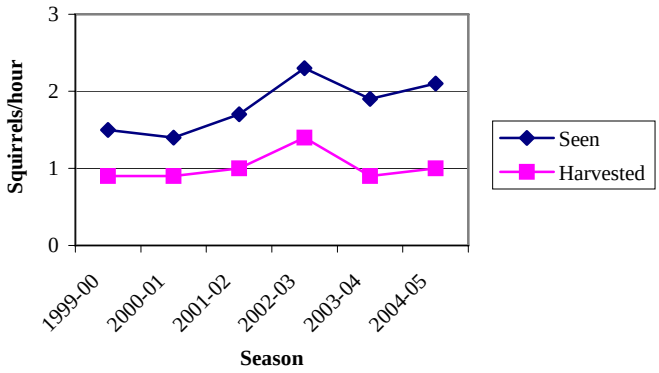
Eastern Kentucky mast ratings by tree species for 2003.



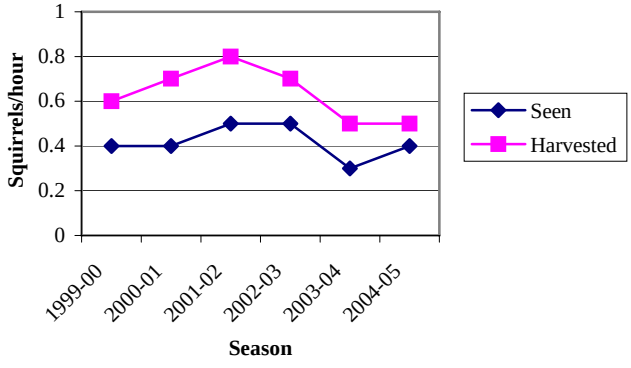
III. 2005-06 Fall Squirrel Hunt Forecast

An abundant mast crop in 2003 provided last year's hunters with an increase in gray and fox squirrel populations. The result was a rebound in the harvest from the small dip it took the previous year. Hunters observed 2.5 squirrels per hour, and harvested nearly half of those seen. Looking at the results from the last five years of surveys, gray squirrels are showing population growth, whereas fox squirrel populations are showing stability or a slight decline. Hopefully, the fox squirrel population is staying around carrying capacity (which means as many fox squirrels as Kentucky's habitat can support, but we will need a few more years of data to be sure.

Gray squirrels seen and harvested from Fall Squirrel Hunter Cooperator Survey, 1999-2005.



Fox squirrels seen and harvested from Fall Squirrel Hunter Cooperator Survey, 1999-2005.



The question remains – can last year's performance be repeated? Probably not! According to our surveys, 2004 was Kentucky's worst mast crop in over twenty years. Many of you may have witnessed the resulting dispersal of squirrels in search of other food sources in what was labeled by the media as a squirrel "migration". Reports came in of squirrels swimming across lakes, seventy road-killed squirrels along one section of highway, and as many as thirty squirrels in one tree. The last time such a widespread "migration" was reported was over thirty-five years ago in 1968. Unfortunately, the combination of a mast shortage and the increased movement generally results in widespread mortality and lower reproductive success. Based on past data, that will probably translate to a season where hunters will experience well below two squirrels seen per hour. However, don't dismay! Three of the previous five years have been good mast years, including 2003, which was Kentucky's best mast crop in twenty years. This could partially offset last year's below-average crop. Regardless, take the time to get out in the field this fall and have a safe and enjoyable squirrel season. Thanks for your support.

Figure 8. Mast rating compared to squirrels seen/hour from Kentucky, 1997-2004.

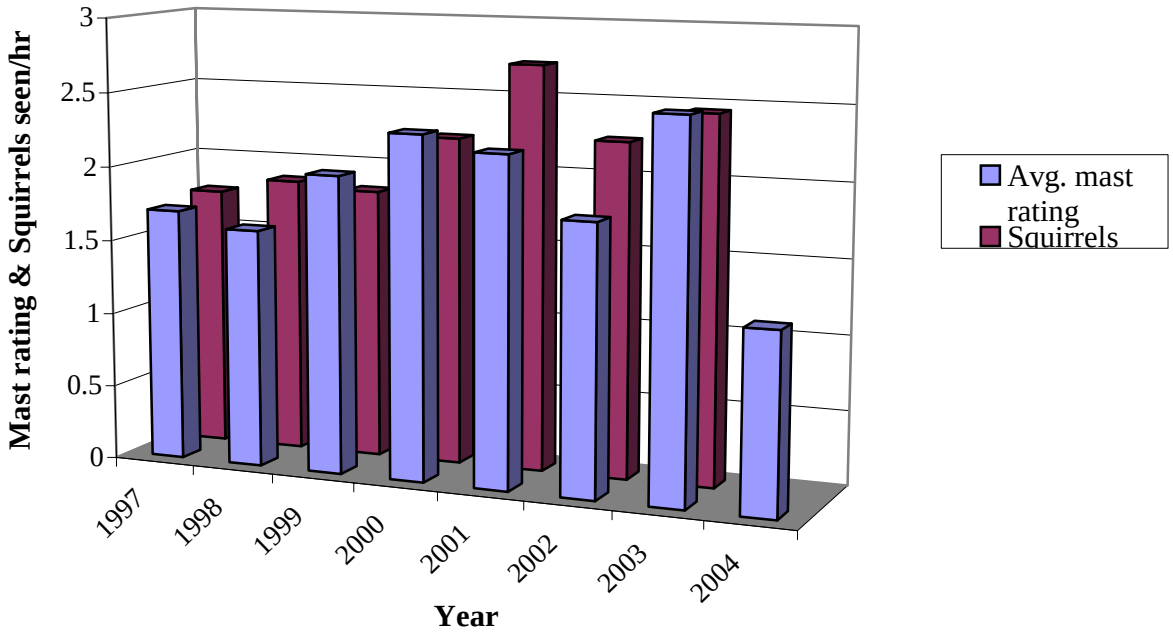


Figure 1. Distribution of Hunts from Squirrel Hunting Logs.